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(19)(CA) **APPLICATION FOR CANADIAN PATENT** (12)

(54) Cosmetic Article

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Abstract of the Disclosure

An absorbent article for skin care is disclosed which when used is capable of absorbing relatively large amount of body fluids while also delivering a benefit to skin. The article includes an absorbent substrate which carries a layer of oil on one surface. The oil is deposited from an oil-in-water emulsion on that surface of the substrate that is to be held in contact with the skin.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. An article for delivering a layer of cosmetic or therapeutic substance to human skin, said article comprising:

(a) a flexible substrate comprising at least one absorbent layer capable of absorbing at least 5 times its weight of water, and

(b) an oil uniformly distributed on a surface of said substrate in an effective amount to produce a cosmetic or therapeutic effect, said oil having been deposited on said surface of said substrate from an oil-in-water emulsion containing said oil.

2. The article of claim 1 wherein said oil is uniformly distributed on said surface of said substrate as particles having diameters no larger than 10 microns.

3. The article of claim 1 wherein said oil-in-water emulsion containing said oil has been rendered stable by passing components forming said emulsion through an ultrasonic emulsifier.

4. The article of claim 1 wherein said substrate comprises at least one layer formed from a natural or synthetic fiber selected from the group consisting of foam, sponge, woven fabric, knitted fabric, nonwoven materials and combinations therof.

5. The article of claim 4 wherein said natural or synthetic fiber is selected from the group consisting of cotton, rayon, viscose rayon, polyesters, polyolefins, polyamides, polyvinyl acetates, polyacrylics, polymethacrylics, carboxymethylated pulp fiber, polyurethane and mixtures thereof.

6. The article of claim 1 wherein said oil is a heavy paraffin-base mineral oil.

7. The article of claim 6 wherein said heavy oil is petroleum jelly.

8. The article of claim 1 wherein said substrate is in the form of a diaper.

9. The article of claim 1 wherein said substrate is in the form of an incontinence pad or an incontinence garment.

10. The article of claim 1 wherein said substrate is in the form of a bandage.

11. The article of claim 1 wherein said substrate is in the form of an applicator pad.

12. The article of claim 1 wherein said substrate (a) comprises an article of clothing.

13. The article of claim 1 wherein said oil is distributed on the

surface of said substrate in quantities from about 0.01 to about 0.10 grams per cm^2.

14. A method for absorbing body fluids while also delivering a uniform layer of oil to human skin, said method comprising applying the article as defined in claim 1 to the skin, so that said surface of said article having said oil distributed thereon is held in contact with the skin.

15. A process for preparing an article that is highly absorptive of body fluids while said article also delivers a cosmetic or therapeutic amount of oil to human skin, said process comprising the steps of:

(a) forming a flexible substrate comprising at least one absorbent layer capable of absorbing at least 5 times its weight of water, and

(b) applying to said substrate an oil-in-water emulsion of said oil such that said water is absorbed into said substrate, thereby depositing a continuous film of said oil onto a surface of said substrate.

16. The process of claim 15 wherein said oil-in-water emulsion is applied to said substrate by means of spray-coating.

17. The article for delivering a layer of cosmetic or therapeutic substance to human skin as claimed in claim 1 and substantially as described herein.

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COSMETIC ARTICLE

Field of the Invention

The present invention relates to an article, such as a disposable diaper or a sanitary napkin, which is cabable of absorbing relatively large amounts of fluids while also delivering a cosmetically or therapeutically beneficial substance to human skin.

The Related Art

Use of absobent articles for taking up body fluids often results in skin irritation and maceration. Prolonged contact with body fluids as well as friction of an absorbent article against the skin

contribute to injuring the skin. A layer of skin soothing substance is usually applied to skin to treat the irritation and prevent successive rewetting. To eliminate the need for separately applying a protective layer of soothing substance to skin, attempts have been made to prepare absorbent articles which contain skin care substances.

U.S. Patent 3,585,998 to Hayford et al. teaches a disposable baby diaper, an interior liner of which carries an array of pressure-rupturable capsules containing baby oil. The patent teaches that it is desirable to break the capsules prior to using the diaper by applying pressure with such household items as a rolling pin, hand iron, etc. The same principle of pressure-rupturable capsules is used in U.S. Patent 3,464,413 to Goldfarb et al. for making bandages capable of delivering a medicinal material to an injury. Articles disclosed by both patents have a serious drawback. Namely, unless the capsules are ruptured by applying pressure prior to using the diaper or the bandage, the skin-care substance contained in the capsules is either not delivered at all or is delivered non-uniformly leaving some areas of injured or irritated skin uncoated.

U.S. Patent 3,896,807 to Buchalter teaches an article impregnated with a solid oil phase of cream formulation which forms a cream upon addition of moisture thereto. A major disadvantage of the article disclosed by the reference is that transfer of a beneficial substance from the absorbent substrate to skin is delayed and is only realized when body fluids are released.

U.S. Patent 3,489,148 to Duncan et al. teaches a baby diaper comprising a diaper liner wherein a portion of the liner is coated with a discontinuous film of oleaginous material. The patent teaches that to avoid greasy feel and look, discrete droplets of oleaginous material should be applied to the diaper liner. Apparatus is described for depositing a film made of such droplets from a tray containing oleaginous material to the diaper liner such that diameter sizes of droplets from 0.05 to 1.0 mm are achieved. In a preferred embodiment of the invention, following the manufacture of the diaper, the diaper is folded in such a way that diaper liner contacts only itself apparently to prevent loss of oleaginous material liner or to prevent staining of packaging material. Furthermore, in forming the article, a discontinuous film of oleaginous material located within a central portion of the liner and away from all four sides is applied to the diaper liner. Discontinuous film of oleaginous material located in a manner disclosed is disadvantageous since when transferred to skin it may leave various areas of already injured or irritation sensitive skin uncoated thus decreasing overall efficiency.

Therefore, it is an object of the present invention to provide a flexible absorbent article having a capacity for delivering a cosmetically or therapeutically beneficial substance to skin.

It is a further object of the present invention to provide an article in a form of a flexible substrate, comprising at least one absorbant layer, wherein that surface of the substrate that is to be held in contact with skin carries a continuous layer of oil.

A still further object of this invention is to provide a process by which the aforementioned article can be manufactured.

Another object of this invention is to disclose a method for absorbing body fluids while also delivering a uniform layer of oil to the human skin.

These and other objects will become more apparent by consideration of the detailed description and examples that follow.

SUMMARY OF THE INVENTION

In its broadest aspect, the objects of the invention are accomplished by an article comprising a flexible absorbent substrate and a continuous layer of oil deposited on the skin-contacting surface of the substrate from an oil-in-water emulsion. To insure the efficacy and efficiency of the article it is an essential and critical feature that a continuous layer of oil be deposited. In its preferred embodiment, the invention employs an oil-in-water emulsion containing 15 to 70 % by wt. of oil phase wherein the emulsion has been made and made stable by passing various ingredients forming it through an ultrasonic emulsifier and the particle size of oil phase of the emulsion is not greater than 10 microns.

To deliver a beneficial effect while absorbing body fluids, the

article is to be used so that the oil-carrying surface is held in contact with the body thereby transferring a continuous layer of oil from the article to the skin. While the article is capable of absorbing at least 5 times, preferably at least 15 times, its weight of body fluids, the skin benefit is not delayed waiting for these body fluids to be released.

Although the preferred application of the absorbent articles are as diapers or incontinence pads, other uses such as bandages, sanitary napkins, wipes, articles of clothing, sporting apparel and the like are also within a scope of the present invention.

The absorbent article is primarily intended to deliver a cosmetic or therapeutic substance to skin while absorbing aqueous body fluids such as urine, blood, perspiration, wound exudates, catamenial discharges, etc. However, the invention is useful whereever there is intent to deliver a beneficial skin effect.

DETAILED DESCRIPTION OF THE INVENTION

Herein is disclosed an absorbent article for skin care, which article comprises a flexible absorbent substrate and a continuous layer of oil deposited from an oil-in-water emulsion containing the oil onto a body-contacting surface of the substrate.

The flexible absorbent substrate comprises at least one layer

capable of absorbing at least 5, preferably at least 15 times, its weight of water. When the present invention is used for forming an article of clothing (for example, training pants), the absorbent layer may be the only one, so that the absorbent layer itself acts as a carrier for a continuous layer of oil. However, the absorbent layer may be a component of, or a layer, or a core of any conventional absorbent articles such as diapers, incontinence pads, sanitary napkins, tampons, bandages, sporting goods (for example, head and wrist sweat bands) and the like. The absorbent layer may itself comprise one or more separate and/or distinct zones. It may be covered by or bonded to a liquid permeable top sheet, wherein it is the top sheet that carries a continuous layer of oil on its skin-contacting surface.

Especially preferred skin care absorbent articles of the present invention described herein are disposable diapers or incontinence pads. Articles in the form of disposable diapers are fully described in Duncan and Baker, U.S. Pat. No. RE. 26151; Duncan, U.S. Pat. No. 3,592,194; and Buell, U.S. Pat. No. 3,860,003, which patents are incorporated herein by reference. Skin care articles of the present invention in the form of disposable diapers usually comprise a liquid permeable top sheet carrying on its body contacting surface a continuous layer of oil, a liquid impervious bottom sheet and one or more intermediate layers of or containing the absorbent material or core.

The absorbent core of the flexible absorbent substrate can be in

the form of cloth, knitted fabric, woven fabric, a non-woven substrate, a foam, or a sponge structure. Such absorbent cores can comprise one or more layers selected from the group consisting of cellulose fiber, polyolefins, polyvinyl acetates, polyesters, rayon, viscose rayon, polyamides, carboxymethylated pulp fiber, polyurethane, polyurethane derivatives, polyacrylic acid derivatives, polymethacrylics, hydrophilized hydrophobic fibers (such as surfactant-treated or silica-treated thermoplastic fibers) and the like. Various combinations of porosities and densities of the aforementioned materials may be used in constructing an absorbent core. The absorbent core of the skin care article of this invention may also include additional materials for improving absorbency, sponginess, water retention and wicking. References involving the preparation of absorbent articles comprising absorbent and superabsorbent materials include, for example, U.S. Pat. No. 4,806,598 (thermoplastic polymer blends), U.S. Pat No. 4,767,825 (superabsorbent thermoplastic compositions), U.S. Pat. No. 4,734,478 (water absorbing agent), U.S. Pat. No. 4,699,619 (two layers of cellulose fibers of different densities), U.S. Pat. No. 4,673,402 (absorbent articles with dual layered cores), U.S. Pat. No. 4,654,039 and U.S. Pat No. RE32,649 (hydrogel forming polymer compositions), U.S. Pat. No. 4,381,783 (absorbent article comprising hydrocolloid material), U.S. Pat. No. 4,381,782 (absorbent materials comprising hydrogel particles and surfactant treated filler), U.S. Pat. No. 4,357,938 (disposable diaper), U.S. Pat. No. 4,333,463 (absorbent structure containing superabsorbent) U.S. Pat. No. 4,263,363 (absorbent article having improved water holding capacity), US. Pat.

No. 4,251,643 (absorbents with improved water absorbing power), U.S. Pat. No. 4,232,674 (liquid absorption device), U.S. Pat. No. 4,192,727 (polyelectrolyte hydrogels), U.S. Pat. No. 4,076,663 (water absorbent starch resins), U.S. Pat. No. 3,997,484 and U.S. Pat. No. 3,981,100 (highly absorbent starch containing polymeric compositions) U.S. Pat. No. 3,670,731 (absorbent product containing a hydrocolloidal composition), and U.S. Pat. No. 3,669,103 (absorbent product containing a hydrocolloidal composition).

Amount and absorbing capacity of the core is determined on the basis of intended use. For a skin care article such as for wiping perspiration, it is sufficient for an article to have an absorbing capacity as low as 5 times its weight of water. When used in disposable diapers the amount of absorbent and absorbing capacity should be sufficient to absorb and retain at least two and preferably at least three urinations, or about 150mm.

Normally, the absorbent core will be bonded to or covered by a liquid permeable body contacting top sheet which carries along its body contacting surface or face a continuous layer of oil. If desired, the top sheet can wrap around the outside edges of the absorbent core and under the liquid impervious bottom sheet. Suitable for use here is any woven or nonwoven cellulosic fibrous web or other water permeable material having sufficient wet-strength and mechanical strength such that it is capable of resisting breakage or disintegration when in contact with the body fluids or when subjected to stress. The top sheet of the skin care article herein can be made in part or

completely of synthetic fibers such as polyester, polyolefin, rayon, rayon/polyester blends or the like, or of natural fibers such as cotton. Advantageously, the top sheet should have fast strike-through of the aqueous fluid without itself becoming wet.

Liquid impervious back or bottom sheets may be formed from any water insoluble film-forming plastic material such as polyethylene, polypropylene, polyurethane, polyamide (e.g. nylon), polyester and the like. The back sheet should be as thin as possible, generally on the order of about 1 mm being satisfactory. In place of a separate film layer attached to the bottom of the absorbent core, a fluid impervious material may be coated onto the bottom of the absorbent core. Coating compositions may be used based on any of the above-mentioned film-forming plastic materials, or any other coating composition which provides a liquid-impervious, non-toxic coating.

Absorbent substrates of skin care articles disclosed by the present invention may be fabricated into any desired shape or configuration. Diaper configuration is described , for example, in U.S. Pat. No.4,051,853 to Egan, the disclosure of which is incorporated herein by reference. However any configuration or shape which will fit snugly in use can be adopted for the skin care absorbent articles of the present invention.

Regardless of whether a single layer or multilayer substrate is used, the top body contacting layer of the absorbent substrate will carry on its body contacting face a continuous layer of oil.

Continuous layer of oil is deposited onto the body-contacting surface of the flexible absorbent substrate from an oil-in-water emulsion.

In the broadest aspect of this invention, the oil-in-water emulsion used for forming the skin-care absorbent articles of the invention comprises oil, humectant (as an optional but preferred ingredient), emulsifier and water. The best results are achieved when the emulsion is made and made stable by passing various ingredients forming it through an ultrasonic emulsifier and the particle diameter size of the oil phase is not greater than 10 microns. Preferably, the oil phase particle diameter will range from 10 down to 0.01 microns. preferably between about 1 and 0.1 microns. The oil phase comprises 15 to 70 %, preferably from 30 to 60 % by weight of the oil-in-water emulsion.

Generally speaking, oils or mixtures of oils that are non-toxic and can provide skin care benefit are within the scope of this invention. Such oils include hydrocarbon oils (for example, petrolatum), animal and fish oils (for example, triglycerides of higher fatty acids) and vegetable oils (for example, olive oil, rapeseed oil and coconut oil). In the most preferred embodiment described hereinafter the oil-in-water emulsion used for depositing a continuous layer of oil on the surface of the absorbent substrate comprises from 30 to 60 % by weight of petroleum jelly in neat or modified form. Modified forms of petroleum jelly include those compositions where some of the petroleum jelly has been replaced by mineral oil. The petroleum jelly that has been used in the foregoing examples is a purified mixture of semi-sold hydrocarbons obtained

from petroleum, chiefly of the methane series having a white to faintly yellowish color, a density of from about 0.820 to about 0.865, a melting point of from about 38°C to about 54°C and a refractive index of from about 1.460 to about 1.474.

The aqueous phase of the emulsion comprises water, optionally a humectant, and an oil-in-water emulsifier. Generally, the weight percentage of the aqueous phase can range anywhere from about 30% to about 85%, by weight, of the entire emulsion.

Although optional it is preferred to incorporate a humectant into the aqueous phase. Humectant can be present from about 1% to about 50%, preferably from about 5% to about 25%, by weight of the aqueous phase. Examples of suitable humectants include glycerine, propylene glycol, sorbitol, sucrose, and the alkali metal salts of pyrrolidone carboxylic acid.

The oil-in-water emulsifying agent which is an essential component of the oil-in-water emulsions used in the invention should be present at from about 0.5 % to about 10%, preferably between about 2% and about 6%, by weight of the aqueous phase. Representative, compatible emulsifying agents that can be utilized include the dialkanolamine alkyl phosphate emulsifiers such as the diethanolamine monoalkyl phosphate species which are complex mixtures of esters of phosphoric acid and long chain alkyl groups. A commercially available material of this type is available under the trademark AMPHISOL and is a complex alkyl phosphate of diethanolamine carrying CAS Registry No. 69331-39-1.

In the most preferred embodiment of the present invention, the aforementioned components which make up the emulsion are processed through an ultrasonic emulsifier in order to insure production of a stable emulsion. Conventional emulsifying apparatus such as colloid mills and homomixers do not produce stable emulsions. Appropriate ultrasonic emulsifier apparatus which can be used to make the emulsions of the present invention are known to persons of ordinary skill in the art. A preferred type of apparatus is available under the trademark SONOLATOR from Sonic Corp., Stratford, CT.

U.S. Patent Nos. 3,926,413 and 3,176,964, both of which are incorporated herein by reference, illustrate the general construction details of the SONOLATOR apparatus. Stated simply, such an apparatus operates by feeding material ($\geq$200 lbs. force/in^2) through a jet into a cavitation zone in the form of a thin flat liquid stream at velocities of $\geq$200ft./sec, where it impinges onto a fixed blade and forces the blade to resonate at its natural, ultrasonic, resonant frequency. Cavitation is induced along the leading edge of the blade and the shock waves caused by the collapse of the cavitation bubbles shatter the large liquid globules and produce fine homogenization.

In a suitable generalized and preferred manufacturing procedure a continuous layer of oil is deposited on the body contacting surface of the flexible absorbent substrate from an oil-in-water emulsion, wherein the emulsion has been prepared as follows:

Oil Phase Preparation

1. Petroleum jelly and glyceryl monostearate are heated (e.g., to 70 degrees C.

2. Propyl paraben is melted into the resulting oil phase.

3. The diethanolamine monoalkyl phosphate emulsifier is then added, and the resulting composition is mixed until uniform.

4. Oil soluble humectant(s) are then added and mixing is resumed.

Water Phase Preparation

1. Water is heated to 70 degrees C.

2. The water soluble ingredients are dissolved in the heated water and mixing is resumed.

After the above preparation of the respective water and oil phases, they are combined and processed in the following manner:

1. The water phase is added to the oil phase and is mixed until uniform, keeping the mixture hot (e.g. 70 degrees C).

2. The resulting mixture is passed once (or multiple times) through

the ultrasonic emulsifier (SONOLATOR emulsifier apparatus) at sufficient pressure (e.g., 1500 psi) to give the desired viscosity.

3. The resulting emulsion is collected in a kettle, cooled (e.g., to 60 degrees C) and fragrance is then added.

Viscosity of the oil-in-water emulsions will vary depending upon the power applied and number of cycles the emulsions have passed through the SOLOLATOR apparatus. The preferred viscosities will range as follows:

Initial (at room temperature)

1 cycle: 975 - 2000 cps

2 cycles: 1000 - 3000 cps

3 cycles: 1700 - 3000 cps

The oil-in-water emulsion compositions, in general, can have viscosities of from about 900 to about 3000 cps.

In forming the skin care absorbent article, the oil-in-water emulsion described hereinbefore is applied to the body contacting surface of the flexible absorbent substrate thereby depositing a continuous layer of oil on the surface of the substrate. The continuous layer comprises a multiplicity of discrete droplets having diameters not greater than 10 microns. A layer of oil is applied to the substrate from an oil-in-water emulsion in quantities of from 0.001 to 0.10 grams of oil per square inch of the absorbent substrate.

Application of the emulsion is most preferably performed by means of spray-coating employing, for example, a spray gun. However, other means of application are within the scope of this invention.

The examples which follow illustrate the present invention in greater detail. However it should be understood that the present invention in its broadest aspect is not necessarily limited to these examples.

EXAMPLE I

The following ingredients were used to prepare an oil-in-water petroleum jelly emulsion:

Ingredient	Weight Percent
Petroleum jelly	50.00
Diethanolamine monoalkyl phosphate (AMPHISOL)	3.00
Glyceryl monostearate	2.00
Propyl paraben	0.10
Methyl paraben	0.15
Deionized water	34.25
Propylene glycol	10.00
Bath oil fragrance	0.50

Petroleum jelly and glyceryl monostearate were heated to 70°C forming an oil phase mixture to which was then added propyl paraben and diethanolamine monoalkyl phosphate (AMPHISOL). The resulting oil phase mixture was mixed until uniform.

The water was heated to 70°C and the methyl paraben was dissolved therein. Propylene glycol was added to the resulting aqueous mixture and blended into it forming an aqueous phase mixture.

Thereafter, the aqueous phase mixture was added to the oil phase mixture and the combination stirred for 20 minutes. Fragrance was added at 60°C. The resulting mixture was passed through an ultasonic

emulsifier (SONOLATOR brand) at 60°C. Use of feed pressures lower than 1500 psi in the apparatus utilized in this Example tended to produce unstable emulsions.

Emulsion stability can be further improved by passing the emulsion through the ultrasonic emulsifier more than once. Repeated emulsification produces higher viscosity emulsions. The oil-in-water emulsion prepared in the manner described under Example I was stable and suitable for depositing a continuous layer of oil on the surface of the substrate.

To determine if petroleum jelly can be released from the fabrics which have been treated with petroleum jelly tests described under Examples II and III were conducted.

EXAMPLE II

Oil-in-water emulsion prepared in the manner described under Example I was spray-coated onto one surface of a 17 x 23.5 cm piece of fabric and allowed to air-dry. The treated piece of fabric was thoroughly hydrated with deionized water and then squeezed dry. The liquid obtained was collected in an aluminum pan and allowed to evaporate to dryness in an environmental chamber (<20% relative humidity) for 72 hours. The residue was found to be 80% petroleum jelly. By calculation, 2.51 mgs of petroleum jelly were released per each cm^2 of the fabric.

EXAMPLE III

Pieces of various fabrics (17 x 23.5 cm) used for manufacturing diaper liners were spray-coated on one surface with oil-in-water emulsion, which had been prepared as described under Example I. Fabrics were allowed to air-dry. Three tests were conducted to determine if petroleum jelly would be released from the coated fabric.

Test I:

A swatch was cut out of every piece of petroleum jelly coated fabric. The swatches were weighed, placed into aluminum pans, and saturated with ambient deionized water for five minutes. The swatches were hung to dry and reweighed after 24 hours. Aluminum pans were placed into a 20% relative humidity environmental chamber for 72 hours. Data that was generated is summarized in Table I:

TABLE I

Sample No.	Type of Fabric	Weight of Swatch Before (grams)	Weight Lost from Swatch (grams)	Amount of Residue in Pan (grams)
1	9300111	0.4862	0.0421	0.0065
2	K-Webril	0.3526	0.0337	0.0091
3	K-Novonette	1.4259	0.1172	0.0084
4	IP012486-1	0.6027	0.0489	0.0046
5	IP2007033PP	0.5935	0.0894	0.0049
6	K-Webline	0.3932	0.0304	0.0055

Test II:

A swatch was cut out of every piece of petroleum jelly coated fabric. The swatches were weighed, placed into aluminum pans, and saturated with ambient deionized water for five minutes. During the saturation they were also rubbed for approximately five seconds. The swatches were hung to dry and reweighed after 24 hours. Aluminum pans were placed into a 20% relative humidity environmental chamber for 72 hours. Data that was generated is summarized in Table II:

TABLE II

Sample No.	Type of Fabric	Weight of Swatch Before (grams)	Weight Lost from Swatch (grams)	Amount of Residue in Pan (grams)
1	K-Webril	0.3485	0.0323	0.0140
2	K-Novonette	1.3768	0.1162	0.0107
3	IP012486-1	0.5813	0.0462	0.0074
4	IP2007033	0.6079	0.0660	0.0090
5	K-Webline	0.3525	0.0250	0.0077

Test III:

A swatch was cut out of every piece of petroleum jelly coated fabric. The swatches were weighed, placed into aluminum pans, and

saturated for five minutes with deionized water that had been heated to 37°C. During the saturation they were also rubbed for approximately five seconds. The swatches were hung to dry and reweighed after 24 hours. Aluminum pans were placed into a 20% relative humidity environmental chamber for 96 hours. Data that was generated is summarized in Table III:

TABLE III

Sample No.	Type of Fabric	Weight of Swatch Before (grams)	Weight Lost from Swatch (grams)	Amount of Residue in Pan (grams)
1	K-Webril	0.3386	0.0304	0.0176
2	K-Novonette	1.4811	0.1418	0.0456
3	IP012486-1	0.5919	0.0460	0.0189
4	IP2007033	0.5500	0.0707	0.0725
5	K-Webline	0.3248	0.0160	0.0114

Samples No. 2, 3 and 5 from Test III were anlysed for petroleum jelly content. Results of the analysis were summarized in Table IV:

TABLE IV

Sample No.	Type of Fabric	Petroleum Jelly in Residue (%)	Petroleum Jelly Released from Swatch (mg)
2	K-Novonette	11.4	5.2
3	IP012486	21.8	4.1
5	K-Webline	25.1	2.9

Petroleum jelly was released without difficulty from all test fabrics in Examples II and III. Petroleum jelly release was increased when the fabric was rubbed for five seconds (Test II). Still more petroleum jelly was released (Test III) when fabrics were hydrated with water at body temperature (37°C). From the results in Table IV it is evident that from about 11% to about 25% of petroleum jelly can be released to the body from petroleum jelly coated fabric.

The foregoing description and Examples illustrate selected embodiments of the present invention and in light thereof variations and modifications will be suggested to one skilled in the art, all which are in the spirit and purview of this invention.